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## SEQUENCE LISTING

<110> Tomb, Jean-Francois  
Bramucci, Michael G.  
Cheng, Qiong  
Kostichka, Kristy N.

<120> Rhodococcus Cloning and Expression Vectors

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<150> 60/254,868

<151> 2000-12-12

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<213> Rhodococcus AN12

RECEIVED

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 Glu Ile Tyr Met Ser Ser Asp Phe Ile Ala Glu Arg Trp Glu Ala Gly  
 275 280 285  
 Leu Ala Lys His Gly Val Asp Phe Leu Arg Asp Ser Gly Gly Leu Asp  
 290 295 300  
 Trp Thr Val Ala Lys Asp Ala Arg Ala Ile Gly Asn Tyr Val Ser Lys  
 305 310 315 320  
 Met Gln Thr Ser Thr Asp Ala Ile Ser Ser Glu Val Thr Leu Gly Gly  
 325 330 335  
 Phe Lys Lys Ala Arg Asn Gly Asn Arg Thr Pro Phe Gln Ile Leu Ala  
 340 345 350  
 Asp Ile Leu Ser Leu Gly Asp Val Asp Asp Leu Lys Leu Trp Lys Glu  
 355 360 365  
 Tyr Glu Lys Ala Ser Phe Gly Arg Arg Ala Leu Thr Trp Ser Lys Gly  
 370 375 380  
 Leu Arg Asp Trp Ala Asn Leu Gly Val Glu Gln Ser Asp Glu Glu Ile  
 385 390 395 400

Ala Ser Glu Glu Ile Gly Asp Glu Ala Ile Ala Leu Phe Thr His Asp  
405 410 415

Ala Trp Arg Gln Val Arg Arg Phe Gly Ala Ala Glu Leu Leu Asp Val  
420 425 430

Thr Glu Ser Gly Gly Arg Ala Ala Ala Tyr Arg Trp Leu Asp Phe Arg  
435 440 445

Glu Ile Asp Trp Ser Leu Pro Pro Lys Ile Glu  
450 455

<210> 22

<211> 456

<212> PRT

<213> Streptomyces lividans

<400> 22

Met Asp Pro Ala Ser Gly Val Ile Val Ala Gln Thr Ala Ala Gly Thr  
1 5 10 15

Ser Val Val Leu Gly Leu Met Arg Cys Gly Arg Ile Trp Leu Cys Pro  
20 25 30

Val Cys Ala Ala Thr Ile Arg His Lys Arg Ala Glu Glu Ile Thr Ala  
35 40 45

Ala Val Val Glu Trp Ile Lys Arg Gly Gly Thr Ala Tyr Leu Val Thr  
50 55 60

Phe Thr Ala Arg His Gly His Thr Asp Arg Leu Ala Asp Leu Met Asp  
65 70 75 80

Ala Leu Gln Gly Thr Arg Lys Thr Pro Asp Ser Pro Arg Arg Pro Gly  
85 90 95

Ala Tyr Gln Arg Leu Ile Thr Gly Gly Thr Trp Ala Gly Arg Arg Ala  
100 105 110

Lys Asp Gly His Arg Ala Ala Asp Arg Glu Gly Ile Arg Asp Arg Ile  
115 120 125

Gly Tyr Val Gly Met Ile Arg Ala Thr Glu Val Thr Val Gly Gln Ile  
130 135 140

Asn Gly Trp His Pro His Ile His Ala Ile Val Leu Val Gly Gly Arg  
 145 150 155 160  
 Thr Glu Gly Glu Arg Ser Ala Lys Gln Ile Val Ala Thr Phe Glu Pro  
 165 170 175  
 Thr Gly Ala Ala Leu Asp Glu Trp Gln Gly His Trp Arg Ser Val Trp  
 180 185 190  
 Thr Ala Ala Leu Arg Lys Val Asn Pro Ala Phe Thr Pro Asp Asp Arg  
 195 200 205  
 His Gly Val Asp Phe Lys Arg Leu Glu Thr Glu Arg Asp Ala Asn Asp  
 210 215 220  
 Leu Ala Glu Tyr Ile Ala Lys Thr Gln Asp Gly Lys Ala Pro Ala Leu  
 225 230 235 240  
 Glu Leu Ala Arg Ala Asp Leu Lys Thr Ala Thr Gly Gly Asn Val Ala  
 245 250 255  
 Pro Phe Glu Leu Leu Gly Arg Ile Gly Asp Leu Thr Gly Gly Met Thr  
 260 265 270  
 Glu Asp Asp Ala Ala Gly Val Gly Ser Leu Glu Trp Asn Leu Ser Arg  
 275 280 285  
 Trp His Glu Tyr Glu Arg Ala Thr Arg Gly Arg Arg Ala Ile Glu Trp  
 290 295 300  
 Thr Arg Tyr Leu Arg Gln Met Leu Gly Leu Asp Gly Gly Asp Thr Glu  
 305 310 315 320  
 Ala Asp Asp Leu Asp Leu Leu Leu Ala Ala Asp Ala Asp Gly Gly Glu  
 325 330 335  
 Leu Arg Ala Gly Val Ala Val Thr Glu Asp Gly Trp His Ala Val Thr  
 340 345 350  
 Arg Arg Ala Leu Asp Leu Glu Ala Thr Arg Ala Ala Glu Gly Lys Asp  
 355 360 365  
 Gly Asn Glu Asp Pro Ala Ala Val Gly Glu Arg Val Arg Glu Val Leu  
 370 375 380  
 Ala Leu Ala Asp Ala Ala Asp Thr Val Val Val Leu Thr Ala Gly Glu  
 385 390 395 400

Val Ala Glu Ala Tyr Ala Asp Met Leu Ala Ala Leu Ala Gln Arg Arg  
 405 410 415

Glu Glu Ala Thr Ala Arg Arg Arg Arg Glu Gln Asp Asp Asp Gln Asp  
 420 425 430

Asp Asp Ala Asp Asp Arg Gln Glu Arg Ala Ala Arg His Ile Ala Arg  
 435 440 445

Leu Ala Ser Gly Pro Thr Ser His  
 450 455

<210> 23

<211> 528

<212> PRT

<213> Streptomyces phaeochromogenes

<400> 23

Met Leu Asn Arg Val Ser Gly Ile Asp Ala Cys Gly Gly Cys Gly Arg  
 1 5 10 15

Arg Val Leu Asp Pro Asp Thr Gly Val Ile Tyr Ala Lys Ser Ser Arg  
 20 25 30

Gly Tyr Val Val Thr Ile Gly Leu Val Arg Cys Gly Arg Ile Trp Phe  
 35 40 45

Cys Pro Glu Cys Ser Ser Ala Ile Arg Arg Gly Arg Thr Glu Glu Ile  
 50 55 60

Lys Thr Gly Ala Leu Arg His Leu Ala Ala Gly Gly Thr Leu Ala Val  
 65 70 75 80

Val Val Leu Thr Ala Arg His Asn Gln Thr Thr Asp Leu Asp Ser Leu  
 85 90 95

Val Ala Ala Leu Trp Gly Gly Pro Leu Leu Asp Asp Lys Gly Ala Pro  
 100 105 110

Val Leu Asp Arg Ser Gly Lys Pro Arg Arg Ala Pro Gly Ala Tyr Gln  
 115 120 125

Arg Met Leu Thr Ala Pro Ala Phe Tyr Gly Arg Pro Glu Ala Arg Arg  
 130 135 140

Thr Arg Lys Asp Gly Thr Gln Tyr Val Arg Pro Ala Glu Asp Gly Ile  
 145 150 155 160  
 Arg His Arg Ile Gly Tyr Ile Gly Met Val Arg Ala Ala Glu Val Thr  
 165 170 175  
 Arg Ser Lys Lys Asn Gly Tyr His Pro His Leu Asn Leu Leu Val Phe  
 180 185 190  
 Leu Gly Gly Glu Leu Ser Gly Thr Pro Ala Lys Gly Asp Val Val Gly  
 195 200 205  
 His Phe Glu Pro Ser Glu Thr Asp Leu Gly Asp Trp Glu Asp Trp Leu  
 210 215 220  
 Arg Glu Met Trp Ala Gly Ala Leu Lys Arg Ala Asp Pro Lys Phe Glu  
 225 230 235 240  
 Pro Ser Thr Asp Cys Asp Thr Pro Gly Cys Lys Cys Lys Gly Lys Gly  
 245 250 255  
 His Gly Val Met Val Ser Ile Val Arg Ser Ala Asp Asp Val Ala Leu  
 260 265 270  
 Ile Glu Tyr Leu Thr Lys Asn Gln Asp Gly Lys Arg Glu Arg Pro Asp  
 275 280 285  
 Ser Val Asp Gln Asp Leu Glu Ala Ala Gly Ala Ala Met Glu Thr  
 290 295 300  
 Ala Arg Leu Asp Ser Lys Thr Gly Arg Gly Arg Lys Ser Met Thr Pro  
 305 310 315 320  
 Phe Gln Ile Leu Tyr Arg Leu Trp Asp Ile Glu Val Ala Gly Leu Asp  
 325 330 335  
 Pro Asp Met Ala Glu Gly Tyr Gly Thr Pro Lys Gln Leu Arg Ala Trp  
 340 345 350  
 Trp Ala Gln Tyr Glu Glu Ala Leu Ala Gly Arg Arg Ala Ile Glu Trp  
 355 360 365  
 Thr Arg Gly Leu Arg Arg His Val Asp Leu Asp Gly Asp Asp Asp Glu  
 370 375 380  
 Glu Thr Asp Leu Gln Tyr Val Tyr Glu Pro Glu Ala Ala Pro Leu Asp  
 385 390 395 400

Gly Gly Val Val Leu Thr Ser Asp Ala Met Arg Leu Val Val Gly Ala  
 405 410 415  
 Asp Ala Glu Leu Asp Leu Asp Asp Val Val Arg Ala Glu Ala Tyr Tyr  
 420 425 430  
 Ser Ala Val Asp Val Val Thr Gly Leu Gly Gly Arg Ala Asp His Val  
 435 440 445  
 Arg Val Ala Thr Ala Glu Glu Leu Ala Glu Val Gln Glu Val Leu Phe  
 450 455 460  
 Ala Arg Thr Gln Glu Arg Ala Glu Glu Ser Arg Arg Gln Arg Arg Ile  
 465 470 475 480  
 Ala Glu His Glu Ala Glu Gln Ala Ala Ala His Arg Lys Arg Gln Glu  
 485 490 495  
 Leu Ala Arg Cys Leu Gly Leu Leu Val Arg Gln Arg Gly Gly Thr Gln  
 500 505 510  
 Asp Asp Ser Ala Ala Asp Asn Phe Val Ala His Ile His Ala Asn Arg  
 515 520 525  
  
 <210> 24  
 <211> 451  
 <212> PRT  
 <213> Streptomyces nigirifaciens  
  
 <400> 24  
 Met Asp Pro Ala Ser Gly Val Ile Val Ala Gln Thr Ala Ala Gly Thr  
 1 5 10 15  
 Ser Val Val Leu Gly Leu Met Arg Cys Gly Arg Ile Trp Leu Cys Pro  
 20 25 30  
 Val Cys Ala Ala Thr Ile Arg His Lys Arg Ala Glu Glu Ile Thr Ala  
 35 40 45  
 Ala Val Val Glu Trp Ile Lys Arg Gly Gly Thr Ala Tyr Leu Val Thr  
 50 55 60  
 Phe Thr Ala Arg His Gly His Thr Asp Arg Leu Ala Asp Leu Met Asp  
 65 70 75 80



Ala Leu Gln Gly Thr Arg Lys Thr Ala Asp Ala Pro Arg Arg Pro Gly  
85 90 95

Ala Tyr Gln Arg Leu Ile Thr Gly Gly Thr Trp Ala Gly Arg Arg Ala  
100 105 110

Lys Asp Gly His Arg Ala Ala Asp Arg Glu Gly Ile Arg Asp Arg Ile  
115 120 125

Gly Tyr Val Gly Met Ile Arg Ala Thr Glu Val Thr Val Gly Gln Ile  
130 135 140

Asn Gly Trp His Pro His Ile His Ala Ile Val Leu Val Gly Gly Arg  
145 150 155 160

Thr Glu Gly Glu Arg Ser Ala Lys Gln Ile Val Gly Thr Phe Glu Pro  
165 170 175

Ser Glu Ala Ala Leu Asp Glu Trp Gln Gly Gln Trp Arg Ala Val Trp  
180 185 190

Thr Ala Ala Leu Arg Lys Val Asn Pro Gln Phe Thr Pro Asp Asp Arg  
195 200 205

His Gly Val Asp Phe Lys Arg Leu Glu Thr Glu Arg Asp Ala Asn Asp  
210 215 220

Leu Ala Glu Tyr Ile Ala Lys Thr Gln Asp Gly Lys Ala Pro Ala Leu  
225 230 235 240

Glu Leu Ala Arg Ala Asp Leu Lys Thr Ala Asn Gly Gly Asn Val Ala  
245 250 255

Pro Phe Glu Leu Leu Gly Arg Ile Gly Asp Leu Thr Gly Gly Met Thr  
260 265 270

Glu Asp Asp Ala Ala Gly Val Gly Ser Leu Glu Trp Asn Leu Ala Arg  
275 280 285

Trp His Glu Tyr Glu Arg Ala Thr Lys Gly Arg Arg Ala Ile Glu Trp  
290 295 300

Thr Arg Tyr Leu Arg Gln Met Leu Gly Leu Asp Gly Gly Asp Thr Glu  
305 310 315 320

Ala Asp Asp Leu Asp Leu Leu Leu Ala Ala Asp Ala Asp Gly Gly Glu  
325 330 335

Leu Arg Ala Gly Val Ala Val Thr Glu Asp Gly Trp His Ala Val Thr  
 340 345 350

Arg Arg Ala Leu Asp Leu Ala Ala Thr Gln Ala Ala Glu Gly Thr Asp  
 355 360 365

Gly Asn Thr Asp Pro Ala Ala Met Gly Glu Arg Val Arg Glu Val Leu  
 370 375 380

Ala His Ala Asp Ala Ala Asp Ala Val Val Val Leu Thr Ser Gly Glu  
 385 390 395 400

Val Ala Glu Ala Tyr Ala Asp Met Leu Ala Ala Leu Ala Leu Arg Arg  
 405 410 415

Glu Glu Ala Ala Ala Arg Arg Arg Arg Glu Gln Asp Asp Asp Gln Asp  
 420 425 430

Asp Asp Ala Asp Asp Arg Gln Glu Arg Ala Ala Arg His Ile Ala Arg  
 435 440 445

Leu Arg Asn  
 450

<210> 25

<211> 30

<212> DNA

<213> Streptomyces lividans

<400> 25

gaggcaaaag cgaacacctt gggaaagaaa

30

<210> 26

<211> 30

<212> DNA

<213> Streptomyces phaeochromogenes

<400> 26

ctggcaaaaa gggacgccta ggtaaagggtt

30

<210> 27

<211> 31

<212> DNA

<213> *Streptomyces nigirifaciens*

<400> 27

gacccaaaaac tgcgcgcct tgggaaagaa a

31

<210> 28

<211> 20

<212> DNA

<213> Primer

<400> 28

atttcgttga acggtcgcc

20

<210> 29

<211> 20

<212> DNA

<213> Primer

<400> 29

cggcaatccg acctctacca

20

<210> 30

<211> 20

<212> DNA

<213> Primer

<400> 30

tgagacgagc cgtcagcctt

20